D7.3 Identification and assessment of exploitable results

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1 EXECUTIVE SUMMARY

This document identifies, summarizes and starts managing the exploitable results for the COREWIND project. This activity will gain precision and become sharper as developments will progress, therefore getting closer to the result exploitation. It will use the identified results from the proposal stage as a starting point, also taking the inputs from the first 18 months (M18) of development in the COREWIND project.

This deliverable summarizes the COREWIND project Exploitable Results (ER) and their exploitation vision. It characterizes their distinctive features, maturity levels and steps needed to maximize exploitation, market uptake and commercialization. It is part of Work Package WP7 (Standardization, Commercialization and Exploitation Actions) and specifically of Task T7.2 (Competence analysis, identification and management of exploitation results). T7.2 activities will continue to accompany the development of the results until M36 and they will be documented in the different reports (Deliverables D7.4 and D7.5). They will run in parallel to the technical development to ensure readiness of market entry, while at the same time shaping the development paths to increase the strengths and limit the weaknesses.

In total, 17 ER have been identified and characterized: 9 "Products/Application", 4 "Services'', 4 "Knowledge & IP''. Current Technology Readiness Levels (TRLs) are in the 2-4 range and are expected to be in the 4-6 range by the end of the project. This deliverable will be the basis of the activities planned for the next months (e.g., SWOT analysis, Value map, Fit) that will be documented in the next revisions (D7.4 in M27, D7.5 in M36) when the developments and outlook will be clearer, also leveraging the acquired specific knowledge (e.g., market and stakeholder analysis, standardization needs). The analysis documented in this report (and in its following updates) will be used to define exploitation plans (T7.3) and commercialization plans (T7.4).

2 Introduction and Methodology

Offshore wind generation is currently an expansive market and a lot of interest has been placed in recent years on floating technologies that have several advantages, including access to deep-water sites with more stable wind speeds. However, floating offshore wind is facing several challenges, including those related with corrosion, fatigue, erosion, lightning strikes and biofouling, just to name a few.

Offshore wind technology still needs to overcome some market barriers, mainly related to technical, social and economic (i.e., cost) aspects. The objective of this deliverable is to identify and initiate the management of the Exploitable Results (ER) of the COREWIND project as well as to create the framework for their post-project market uptake and exploitation. The outcome is a list of exploitable results and a methodology for a structured and synchronized approach to deal with them during the project. In this way, all available opportunities are identified, planned and executed and the project partners can start to develop business plans for their exploitable results. In the project, exploitable results provide a mechanism to define impact and strategy. After the project, exploitable results provide the way to achieve their impact.

This deliverable D7.3 is the first version of the final one, which is due in month 36 (D7.5) after an update at month 27 (D7.4). Therefore, in the present deliverable we describe the key exploitable results that are the current envisioned results from the work carried out in the project. For each of the results we present the innovative features and the Technology Readiness Levels (TRLs) before and expected after the completion of the project. As part of Task T7.2, SWOT (Strengths, Weaknesses, Opportunities and Threads) analysis, Value Map and the Fit between costumer/market needs (defined in T7.1) and the Value Map will be performed; they will be documented in the next updates.

As a base definition, Exploitable Results are the achieved and/or expected results coming from the COREWIND project that will have an impact on economy, environment and/or society as a whole. These results have commercial or social significance and can be exploited as stand-alone products, processes, services, etc. In principle, these exploitable results might need further R&D, prototyping, engineering, validation after the project ends and before they become commercially exploitable. This set of exploitable results also includes "softer" results such as the platforms, publications of a journal article, a methodology or piece of knowledge that can be "shopped" to create contacts, first adopters, networks or other opportunities. However, often exploitable results are more tangible and concrete with therefore envisioned economic benefits for developers/owners.

The journey of exploitable result identification and management is exciting and should encourage "an entrepreneurial spirit" and "culture of innovation" within the project. Part of this spirit is captured in Figure 1 to communicate the vision of the exploitable results process.
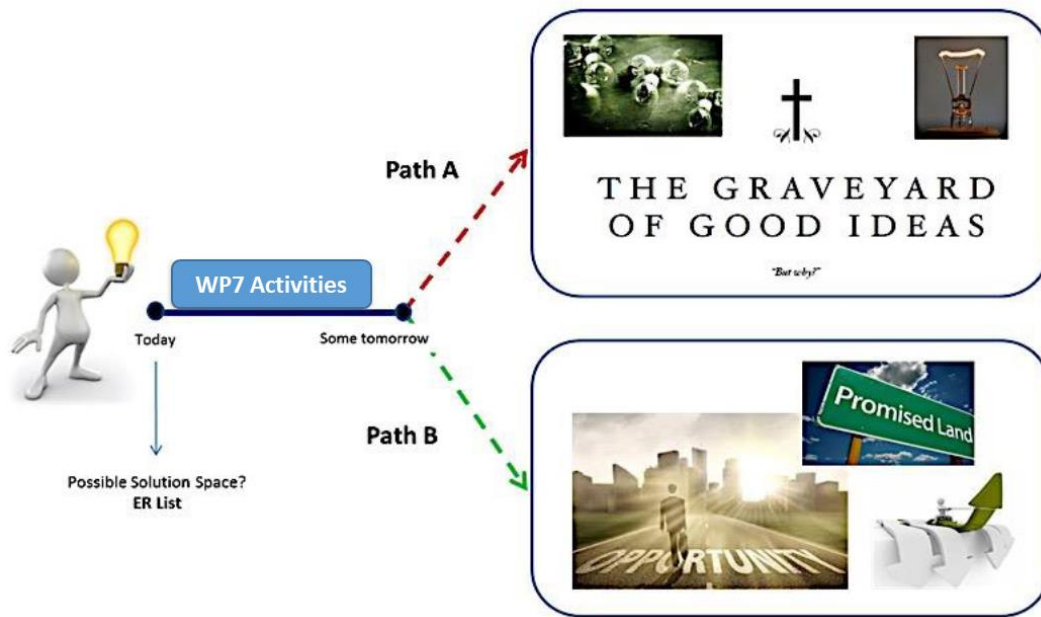
Figure 1: [TITLE and SOURCE]

Considering Innovation Levels and Providing a Benchmark Reference

It is helpful to provide reference points and benchmarks in the identification, communication and development of exploitable results related to innovation level and technology readiness levels. We do this using the concepts shown in Figure 2.

In considering these figures and concepts, it may be the case that Innovation Level or TRL may not be directly applicable to each type of exploitable result. However, they do provide one measure of "what is the progress beyond the state of the art?", "what is the current readiness of the ER in question?" and ''how far are they from commercialization/market entry?''
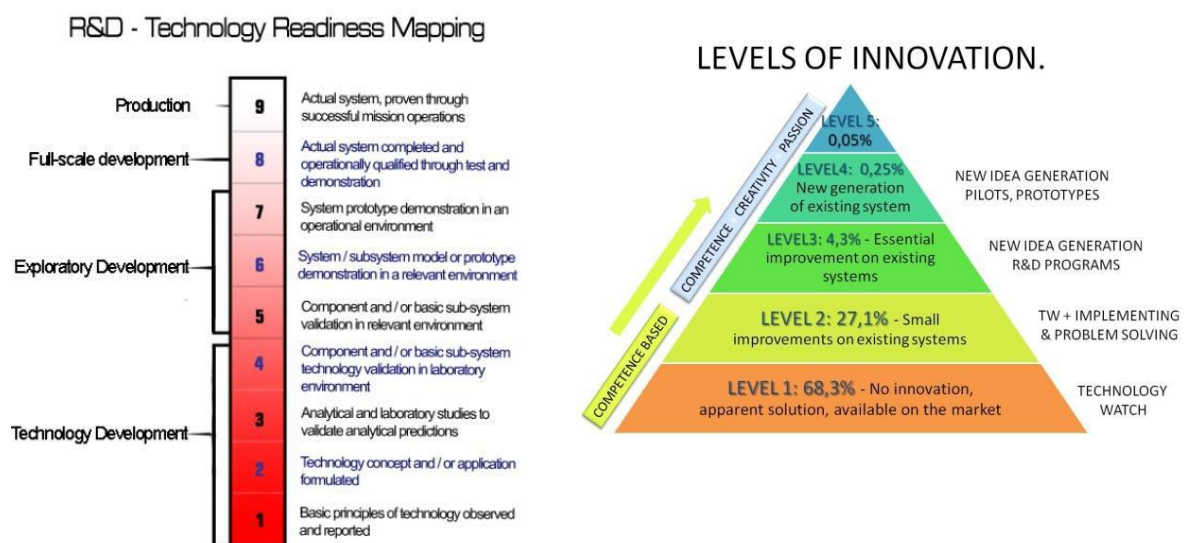

Figure 2. Innovation and TRL levels when communicating ERs [SOURCE]

Exploitable Result Categories

Exploitable results can be categorized into several areas. They are not rigid and in the context of COREWIND the following areas are used:

- **Products** – items for sale
- **Processes** – ways to make or do something
- **Knowledge & Intellectual Property (IP)** – valuation of "how to"
- **Services** – by offering the above products, processes, equipment, or knowledge
- **Other** – Platform, publications, patent….

Exploitable Result Definition Points

From an Exploitation Strategy Seminar (ESS) provided by the Meta Group [SOURCE], the following items are key points to consider in the shaping and development of exploitable results. These points are not included in this deliverable (identification) but instead are part of the development and management process that will occur across the project and will be included in the updates.

- Innovativeness introduced compared to already existing Products/Services
- What is the Unique Selling Point (competitive advantage)?
- Product/Service market size?
- Market Trends/Public acceptance?
- Product/Service positioning?
- Legal or normative or ethical requirements (need for authorizations, compliance to standards, norms, etc.)?
- Who are the competitors for this result?
- Prospects/Customers?
- What are the costs to be incurred after the project end and before commercial exploitation?
- When is the time to market?
- Foreseen Product/Service price?
- Adequateness of consortium staff?
- External experts/Partners to be involved?
- Status of IPR: Background (type and partner owner)?
- Status of IPR: Foreground (type and partner owner)?
- Status of IPR: Exploitation forms (type and partner owner) e.g. direct industrial use, patenting, technology transfer, license agreement, publications, standards, etc?
- Which partner contributes to what (main contributions in terms of know-how, patents, etc.)?
- Partner(s) involved expectations?
- Sources of financing foreseen after the end of the project (venture capital, loans, other grants, etc.)?

3   Exploitable results – Consolidated view

The following ERs are an expansion from the preliminary list of technologies and results proposed in the Description of Action (DoA), which are currently being developed and/or are the vision of the partners. Each ER is assigned to a/several manager(s) who is/are responsible for providing information and updates on the result, defining the steps needed to reach full exploitation and launching it eventually into the market. This process is managed and supported by IREC. In the case of "Knowledge & IP" the ER Manager is likely associated to the IP owner(s). In total 9 "Products/Application", 4 "Services", 4 "Knowledge & IP" have been identified, see Table 1.

#	Type of ER	Exploitable Result	WP	ER Manager
1	Product /Service	FOWAPP	6	IREC
2	Product	DigitalTwin for FOWT	4	IREC
3	Product	Optimized mooring design – WindCrete	2	Innosea
4	Product	Optimized mooring design – ActiveFloat	2	Innosea
5	Product	WindCrete 15MW	1	Universitat Politècnica de Catalunya
6	Product	ACTIVEFLOAT floating structure	1	COBRA - ESTEYCO
7	Product/ Software Feature	HAWC2 software new modelling capability: Floating Wind Farm Modeling	1	DTU
8	Product/Software	Open-Source Software	1	University Stuttgart
9	Product/Software	Software	1	University of Stuttgart
10	Service	O&M planning and strategy tool	4	Ramboll (Floating Wind and Asset Management Team)
11	Service	BIM model	4	Ramboll (Asset Management Team)
12	Knowledge & IP	Floating Turbine wake Investigation	1	DTU
13	Knowledge & IP	Floating wind turbine Installation Modeling	4	DTU
14	Knowledge & IP	Limits of heavy-lift maintenance, large component exchange	4	Ramboll (Floating Wind Team)
15	IP	Innovative shared mooring system	1-2	University of Stuttgart
16	Service	Refinement of certification process for FOWT	7	UL

17	Service	Improved testing concept for FOWT	7	UL	

4   Conclusions

This deliverable reports the exploitation framework and identifies Exploitable Results of the COREWIND project. It initiates the management of the ER, assigns each of them to manager, characterizes their innovative feature, the TRL before and after the project, defines preliminary exploitation visions and actions to maximise the exploitation. In total, 17 Exploitable Results (ER) were identified and characterized: 9 "Products/Application", 4 "Knowledge & IP" and 4 "Services".

This deliverable begins the process of exploitable result management. From this point forward, each result will be considered for shaping/development in line with this. In doing so, not all points will apply to all ERs (e.g. the stakeholder community will not require a market analysis). However, the framework provides a way to discuss, explore and develop the exploitation potential for the foreground. In the next updates of this deliverable we will gradually include SWOT analysis, Value Map and Fit between desired features and benefits to support the result developments. The activities will be informed by other tasks, namely Market and Stakeholder analysis (T7.1) and be critical for the definition of exploitation plans (T7.3), and commercialization plans (T7.4). As described above, the expected TRL at the end of the project is TRL 4-6, therefore additional development will be required and will also be the focus of activities in WP7.